EP 1 069 042 A3 (11)

(12)

EUROPEAN PATENT APPLICATION

- (88) Date of publication A3:
 - (51) Int Cl.7: **B63H 9/10**, B63B 21/04, 25.09.2002 Bulletin 2002/39 F16C 29/06, F16C 33/42
- (43) Date of publication A2: 17.01.2001 Bulletin 2001/03
- (21) Application number: 00114374.2
- (22) Date of filing: 05.07.2000
- (84) Designated Contracting States: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU

MC NL PT SE

Designated Extension States:

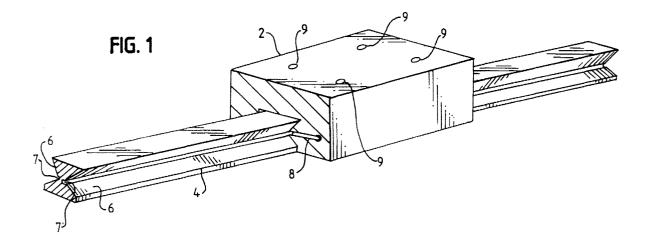
AL LT LV MK RO SI

- (30) Priority: 13.07.1999 US 352432
- (71) Applicant: Harken, Inc. Pewaukee, Wisconsin 53072 (CH)

- (72) Inventors:
 - Lange, Kenneth E. Brookfield, WI 53005 (US)
 - Malcolm, Jonathan D. Pewaukee, WI 53072 (US)
- (74) Representative: Flosdorff, Jürgen, Dr. Alleestrasse 33 82467 Garmisch-Partenkirchen (DE)

(54)Traveller car with recirculating ball bearings and bearing retainer

- (57)A traveler comprises a car (2) slideably held on a track (4), and is useful for applications including trimming a sailboat mast or sail. The car (2) has two side portions each with a race (20) with an open portion (22). Ball bearings (16) are contained in each race (20) that are rotatably engaged between the race open portions (22) and the grooves (6) on the sidewalls of the track
- (4). The car further has retaining means (8) for holding the ball bearings (16) in place along the open portion (22) of the race when the car (2) is removed from the track (4). The retaining means (8) are movably received by the track groove (6), and otherwise allow for free rotational engagement of the groove (6) by the bearings (16).





EUROPEAN SEARCH REPORT

Application Number EP 00 11 4374

| | | ERED TO BE RELEVANT | T | | |
|---|--|--|---|--|--|
| Category | Citation of document with i of relevant pass | ndication, where appropriate, sages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.CI.7) | |
| X Y | US 4 472 003 A (OSA 18 September 1984 (* abstract; figures | 1-5, 11-17,19 6,7,20, 21 | B63H9/10 B63B21/04 F16C29/06 F16C33/42 | | |
| | * column 2, line 33 | - column 3, line 5 * | 2.1 | 1 100337 42 | |
| Y | GB 979 339 A (IAN P 1 January 1965 (196 | ROCTOR METAL MASTS LTD) | 6,7,20, | | |
| Υ | * the whole documen | | 8-10,18 | | |
| Y | US 4 582 369 A (ITC 15 April 1986 (1986 * column 4, line 34 | | 8-10,18 | | |
| Y | US 4 557 530 A (HAA 10 December 1985 (1 * figure 1 * | | 8-10,18 | | |
| Α | US 5 649 769 A (AGA 22 July 1997 (1997- * figure 3 * | RI NORIMASA ET AL) 07-22) | 13 | TECHNICAL FIELDS SEARCHED (Int.Cl.7) | |
| Α | US 4 988 215 A (OSA 29 January 1991 (19 * column 5, line 16 figures 7,11 * | | 1-21 | B63H F16C B63B | |
| А | EP 0 400 200 A (MUG ROBERT C (US); PEST 5 December 1990 (19 * figures 2-4,6 * | GLESTONE PETER R ; MAGEE ER ANDREW L (US)) 90-12-05) | 1-21 | | |
| А | US 4 586 758 A (TER 6 May 1986 (1986-05 * figures 12,13,24- | -06) | 1-21 | | |
| | The present search report has | been drawn up for all claims | | | |
| | Place of search | Date of completion of the search | | Examiner | |
| | MUNICH | 30 July 2002 | Nic | col, Y | |
| X : part Y : part docu A : tech O : non | ATEGORY OF CITED DOCUMENTS cularly relevant if taken alone cularly relevant if combined with anot irrient of the same category nological background -written disclosure mediate document | L : document cited | ocument, but publis ate in the application for other reasons | shed on, or | |

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 00 11 4374

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-07-2002

| C | Patent docume cited in search re | | Publication date | | Patent fam member(s | | Publication date |
|------|-------------------------------------|---|---------------------|--|--|---|--|
| JS · | 4472003 | Α | 18-09-1984 | DE FR | 3313575 2525301 | | 20-10-1983 21-10-1983 |
| B ' | 979339 | Α | 01-01-1965 | NONE | ales decide assess saude assess sauce a.e. 4000 4000 4004 4004 40 | *************************************** | o allar allan allan galli 9900 4900 4000 4000 taka gaza allar yana unin |
| JS 4 | 4582369 | А | 15-04-1986 | JP JP DE EP WO | 59054814 59121225 3378780 0120093 8401194 | A D1 A1 | 29-03-1984 13-07-1984 02-02-1989 03-10-1984 29-03-1984 |
| JS · | 4557530 | Α | 10-12-1985 | NONE | NO. MICH. (MICH. MICH. M | | i Mada waka asaac isa ^{aga} 1990 Mala araw aliay alaac asaa asaa asaa asaa |
| JS ! | 5649769 | Α | 22-07-1997 | JP | 8232953 | Α | 10-09-1996 |
| JS 4 | 49882 15 | Α | 29-01-1991 | JP JP | 2292515 2819610 | | 04-12-1990 30-10-1998 |
| [P | 0400200 | Α | 05-12-1990 | US CA DE DE EP JP | 4932067 1314580 68918585 68918585 0400200 3004021 | A1 D1 T2 A2 | 05-06-1990 16-03-1993 03-11-1994 26-01-1995 05-12-1990 10-01-1991 |
| IS 4 | 4586758 | А | 06-05-1986 | JP JP JP DE FR GB IT KR | 1726839 4002808 60196428 3506083 2561332 2158526 1200598 8701204 | B A A1 A1 A , B B | 19-01-1993 21-01-1992 04-10-1985 26-09-1985 20-09-1985 13-11-1985 27-01-1989 20-06-1987 |

FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82